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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/590,594	06/09/2000	JAMES J. KOSMACH	PF02072NA	1575

20280 7590 01/14/2004

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EXAMINER	
CHANG, EDITH M	
ART UNIT	PAPER NUMBER
2634	7

DATE MAILED: 01/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/590,594	KOSMACH ET AL.	
	Examiner	Art Unit	
	Edith M Chang	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Paper No 6 page 7 lines 6-8, filed November 13 2003, with respect to the rejection(s)of claim(s) 1,2,8,13-14, 17, 20, and 25 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejections are made.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 13-16 & 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamao et al. (US 6351498 B1) in view of Iwamura (US 5742620).

Regarding **claims 1, 13 & 25**, except explicitly specify the bit metrics, Yamao et al. discloses all subject matter: a receiver and its method (FIG.19). It comprises: a detector/means (34 FIG.19) adapted to demodulate a received signal to generate a received word, the received word including a plurality of symbols (FIG.18), each symbol containing data associated with a first phase and data associated with a second phase (d-1, d-2 FIG.19), the detector/means being further adapted to generate a plurality of energy values relating each received symbol to one of a plurality of potential symbols (14 FIG.13, column 10 lines 34-38); and a decoder/means (36

FIG.19, FIG.21) adapted to generate a first set detector output based on the energy values in response to the receiver being assigned to the first phase and a second set of detector output based on the energy values in response to the receiver being assigned to the second phase (FIG. 13, column 8 lines 28-60). However Iwamura teaches the decoder/means with bit metrics to identify the least reliable bits (82 FIG.8 the decoder, FIG. 12 composing the metrics, column 1 lines 39-62, column 10 lines 30-40 the GMD decoding provides the bit metrics). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the decoding taught by Iwamura (Abstract, FIG.3) in Yamao et al.'s FSK energy detector wherein the metrics based on energy values and reducing errors (column 7 lines 15-30, column 8 line 65-column 9 line10 '498) suggested by Yamao et al. (column 8 lines 50-55 where the correlation is performed, and in FIG.21 and column 10 lines 45-55 wherein the patterns of word codes provided for correlating '498) to have a more efficient decoding with less amount of calculation and parallel processing ability (column 5 lines 10-25 '620). Therefore, it would have been obvious to combine Iwamura's teaching with Yamao et al.'s FSK energy detector to obtain the invention as specified in claim 1.

Regarding **claims 2 & 14**, except explicitly specify the least reliable bit, Yamao et al. discloses generating a plurality of candidate codewords (FIG.13, FIG.14, where the h1 and h2 are codewords). However Iwamura teaches generating a plurality of candidate codewords based on the least reliable bits (FIG.3, S211-S214 FIG.12). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the decoding taught by Iwamura (Abstract, FIG.3) in Yamao et al.'s FSK energy detector to have a more efficient decoding with less amount of calculation and parallel processing ability (column 5 lines 10-25).

Regarding **claims 3 & 15**, further Iwamura teaches generating word metric comprising sum of the bit metrics (FIG.12). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the decoding taught by Iwamura (Abstract, FIG.3) in Yamao et al.'s FSK energy detector to have a more efficient decoding with less amount of calculation and parallel processing ability (column 5 lines 10-25).

Regarding **claims 4 & 16**, Iwamura teaches identify the codeword having the greatest bit metric (column 3 lines 19-22 where the indication of reliability is in order, S213 FIG.12). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the decoding taught by Iwamura (Abstract, FIG.3) in Yamao et al.'s FSK energy detector to have a more efficient decoding with less amount of calculation and parallel processing ability (column 5 lines 10-25).

4. Claims 5-9, 11-12, 17-21, & 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamao et al. (US 6351498 B1) in view of Iwamura (US 5742620) as applied to claim 1 above, and further in view of Decrouez (US 5701332).

Regarding **claims 5 & 17**, Yamoe et al. discloses the detector and its method. It comprises an envelope detector being adapted to generate a soft symbol energy (212-213 FIG.7, 14 FIG.13), but not specify the plurality filters. However Decrouez teaches an envelope detector including a plurality of filters and energy calculation circuit (Abstract, 1-4 Fig.1). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the filers taught by Decrouez implemented in Yamoe et al.'s envelope detector to have a fast, reliable and simple designed FSK decoder.

Regarding **claims 6-7, 11, 18-19, & 23**, Yamoe et al. does not specify the upper bound, however Decrouez teaches the potential symbols corresponding to the subsets of symbol of a binary 1 and binary zero selected closest to an upper bound energy threshold (column 1 lines 60-67 where the output level of the filter is at a certain level/closest to an upper bound). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the filers taught by Decrouez implemented in Yamoe et al.'s envelope detector, wherein the subsets of symbols (binary 1 or binary zero) are for the first or second phase (d-1, d-2 FIG.19), to have a fast, reliable and simple designed FSK decoder.

Regarding **claims 8, & 20**, Yamoe et al. discloses a discriminator detector adapted to generate an output energy (36 FIG.19, FIG.21, column 10 lines 43-58), and the decoder is adapted to compare the output energy to a plurality of potential symbol energy thresholds and select the soft symbol energy closest to the associated potential symbol energy (column 10 line 58-column 11 line 45) for the binary 1 and binary zero symbols.

Regarding **claims 9 & 21**, Yamoe et al. does not specify the upper bound, however Decrouez teaches the potential symbols corresponding to a binary 1 and binary zero selected closest to an upper bound energy threshold (column 1 lines 60-67 where the output level of the filter is at a certain level/closest to an upper bound). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the filers taught by Decrouez implemented in Yamoe et al.'s envelope detector to have a fast, reliable and simple designed FSK decoder. With the Decrouez's implementation in Yamoe et al.'s detector, the energy output to the decoder with Iwamura's decoding algorithm, the decoder is adapted to clip the soft energy values at a maximum value to obtain the invention of claim 9.

Regarding **claims 12 & 24**, Yamoe et al. discloses a third and fourth set of symbols for the second phase. The decoder (36 FIG.19, FIG.21, column 10 lines 43-58) adapted to select the soft symbol energy closest to the associated potential symbol energy (column 8 lines 28-60 where the symbol energy measured, column 10 line 58-column 11 line 45, where the bits selected according to the associated potential symbol energy provided) for the binary 1 and binary zero symbols of the subset of the symbols corresponding to a binary 1 and binary zero for the second phase.

5. Claim 10 & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamao et al. (US 6351498 B1) in view of Iwamura (US 5742620) as applied to claim 8 above, and further in view of Mays et al. (US 5278870).

Regarding **claims 10 & 22**, Yamoe et al. does not explicitly specify the channel attenuation estimate, however Mays et al. teaches the decoder is adapted to generate a channel attenuation estimate (FIG.5). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the channel estimator taught by Mays et al. in Yamoe et al.'s decoder to receive the output from the FSK energy detector (wherein the signals of in-phase and quadrature are available to perform the channel attenuation estimate) to have the channel attenuation estimate to reduce the interference in an RF received signal (column 2 lines 5-10).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4800.

Edith Chang
January 3, 2004

CHIEH M. FAN
PRIMARY EXAMINER